

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

RECEIVED

MAR 20 1995

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of)

Allocation of Spectrum Below)
5 GHz Transferred from)
Federal Government Use)

ET Docket No. 94-32

DOCKET FILE COPY ORIGINAL

To: The Commission

COMMENTS OF
THE PART 15 COALITION

The Part 15 Coalition ("the Coalition") submits these comments in response to the Second Notice of Proposed Rulemaking ("Second NPRM") in the above-referenced proceeding.¹ The Coalition represents a group of companies that manufacture and market radio technologies designed to operate on an unlicensed basis in compliance with the Commission's Part 15 rules. In the First Report and Order, the Commission refrained from adding new licensed services to the 2402-2417 MHz band. The addition of licensed users to the 2402-2417 MHz band would have severely limited use of the band by Part 15 technologies. The Coalition, therefore, applauds the Commission's decision and its continued support for Part 15 technologies.

The Commission now requests comment on whether rule changes are necessary to "facilitate the use of this band by ... Part 15 devices."² For the reasons detailed herein, the Coalition urges the Commission to implement the specific rule

¹ Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, First Report and Order and Second Notice of Proposed Rulemaking, ET-94-32 (rel. Feb. 17, 1995).

² Id. ¶ 58.

No. of Copies rec'd
List A B C D E

05

changes set forth below. Beyond those changes, however, the 2400-2483.5 MHz band, and other ISM bands, cannot satisfy the long-term spectrum requirements of unlicensed technologies. Therefore, the Coalition urges the Commission to allocate exclusive spectrum for unlicensed bands in which unlicensed technologies would enjoy, in effect, primary status.

I. Discussion

A. The Commission Sensibly Declined to Introduce Licensed Radio Services into the 2402-2417 MHz Band.

In the First Report and Order, the Commission provided for continued use of the 2402-2417 MHz band by technologies operating under Part 15 of the Commission's rules. These technologies will be critically important to the future development of the National Information Infrastructure (NII). As the Commission noted, applications using these technologies will benefit "virtually every person and business in the nation" and will "promote American competitiveness abroad."³ The introduction of licensed services into the 2402-2417 MHz band would have severely limited the usefulness of this band for Part 15 technologies providing these benefits.⁴

For these and other reasons, the Coalition agrees with the Commission's conclusion that the "public interest is best served by providing for the continued availability [the 2402-2417 MHz] band for Part 15 equipment."⁵

³ Id. ¶ 32.

⁴ Report to Ronald H. Brown, Secretary, U.S. Department of Commerce, Regarding the Preliminary Spectrum Reallocation Report ¶ 39 (rel. Aug. 9, 1994) (unlikely that unlicensed devices would be able to share this band with licensed services).

⁵ Second NPRM ¶ 32.

B. The Coalition Urges the Commission to Allocate Spectrum for Unlicensed Services.

Both the Commission and NTIA have recognized that the availability of adequate spectrum is crucial to the continued success of Part 15 technologies. In the First Report and Order, the Commission found that providing spectrum for Part 15 operations would promote the "introduction of new services and devices and the enhancement of existing services and devices [which] will create new jobs, foster economic growth, and improve access to communications by industry and the American public."⁶

Similarly, the NTIA has stated that the availability of a "long-term, stable regulatory environment" is critical to the development of Part 15 technologies and that the "Commission should consider designating spectrum for some nonlicensed uses or establishing a new nonlicensed radio service and associated allocations."⁷ The latter suggestion commonly is referred to as creation of a "Part 16" for unlicensed technologies. As with Part 15, there would be no licensing under Part 16 and access to the Part 16 spectrum for both entrepreneurs and the public would be uncomplicated and inexpensive. Unlike Part 15, however, Part 16 would provide interference protection for unlicensed technologies operating in the Part 16 band.

In the Second NPRM, the Commission seeks comment on ways to expand the potential for new services based on unlicensed communications technologies, particularly on the need to "increase the status of Part 15 devices" and to create associated "Part 16" rules.⁸ The Commission, thus, recognizes that, as Part 15 technologies become more sophisticated and ubiquitous, the need for increased

⁶ Id. ¶ 1.

⁷ Letter from Larry Irving, NTIA, to Reed Hundt, FCC Chairman, ET- 94-32, 94-124, and PR- 93-61 (Dec. 12, 1994); see also NTIA Final Spectrum Report (Feb. 1995).

⁸ Second NPRM ¶ 58.

interference protection will become more pressing. Yet, the 2400-2483.5 MHz band and other ISM bands, in which unlicensed communications uses are secondary and constantly at risk from ISM and licensed services, will not satisfy this need.

The 902-928 MHz ISM band, after the recent introduction of licensed LMS services, is a case study in the problems faced by unlicensed technologies in these bands.⁹ The 2400-2483.5 MHz ISM band is occupied by millions of microwave ovens, industrial lighting systems, and other ISM devices. Use of the 2400-2483.5 MHz band by ISM devices is expected to increase as new applications are discovered and exploited. For instance, new industrial lighting systems may generate significant levels of radio interference in this band.¹⁰

The 5 GHz ISM band has not been used extensively for Part 15 technologies. Although this undoubtedly will change as current equipment is deployed and new devices are developed that can operate in a cost-effective manner in this portion of the spectrum, unlicensed technologies never can achieve their full potential if they have no interference protection, as is the case in the ISM bands.

The 8.5 GHz above 40 GHz that the Commission has recently proposed to allocate for unlicensed uses,¹¹ offers a better approach in terms of setting aside dedicated frequencies for unlicensed use, but, given the long lead times needed to develop equipment to operate in this region of the spectrum, it does not offer a practical, near-term alternative for most unlicensed technologies. Moreover, due to

⁹ See Amendment of Part 90 of the Commission's Rule to Adopt Regulations for Automatic Vehicle Monitoring Systems, PR Docket No. 93-61 (rel. Feb. 6, 1995).

¹⁰ See, e.g., Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, NPRM, ET-94-32 (rel. Nov. 8, 1994) (Comments of International Microwave Power Institute at 2 (listing new ISM applications in the 2.4 GHz band).

¹¹ See Amendment of Parts 2 and 15 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, 9 FCC Rcd 7078, 7086 (rel. Nov. 8, 1994).

oxygen absorption effects at higher frequencies, these bands are not well suited for medium-range, high-speed, outdoor data links, which promise to be a vital component of the NII. Thus, if new and innovative Part 15 devices are to be developed, additional spectrum below 40 GHz will be required.

For this reason, the Coalition urges the permanent allocation of frequencies in various regions of the radio spectrum for unlicensed technologies. To that end, the Coalition is committed to working with the Commission and the NTIA to find suitable bands of frequencies that could be set aside for use by unlicensed services on a co-primary basis, free from interference from licensed radio services, government users, and ISM devices. Likewise, the Coalition supports the concept of a "Part 16" to govern use of the proposed "unlicensed band." The combination of adequate spectrum and efficient spectrum sharing rules would create an environment in which unlicensed technologies could thrive.

C. While Spectrum Is Being Allocated for "Part 16" Use, the Commission Should Provide Part 15 Services with Increased Interference Protection from ISM Devices Sharing the 2400-2483.5 MHz Band and Should Permit Spread Spectrum Modulation at 24.0-24.25 GHz.

The allocation of exclusive frequencies for an unlicensed Part 16 band is the next logical step toward establishing a stable environment for unlicensed technologies. Until such an allocation has been made, however, the Commission should continue to foster the operations of Part 15 technologies in existing ISM bands. For example, the Commission should limit the increase of interference from new ISM devices in the 2400-2483.5 MHz ISM band and should make the 24 GHz ISM band fully usable by Part 15 technologies employing spread spectrum modulation schemes.

1. Increased Interference Protection at 2400-2483.5 MHz

The Commission has requested comment on "whether any changes should be made to [its] rules to facilitate use of [the 2402-2417 MHz] band by ... Part 15 devices."¹² One improvement that the Commission can effect is to provide more interference protection in the 2400-2483.5 MHz ISM band. Under the Commission's present rules, ISM devices operating in the 2400-2483.5 MHz band must comply with certain technical standards, including the requirement that ISM equipment be "designed and operated in accordance with good engineering practice."¹³ The Coalition urges the Commission to include within its review of what constitutes "good engineering practice" a consideration of whether measures have been taken to minimize in-band interference. This limited step, which could slow the increase in harmful interference in the 2400-2483.5 MHz band, would not inordinately burden ISM device manufacturers. Absent a check on the increase of ISM radio noise in this band, the 2402-2417 MHz band, which the Commission has wisely preserved for Part 15 use, will inevitably become too cluttered for many important Part 15 applications.¹⁴

2. Spread Spectrum Modulation at 24.0-24.25 GHz

Although unlicensed devices currently are authorized to use the 24.0-24.25 GHz frequency band, this band is not one of those in which spread spectrum

¹² Second NPRM ¶ 58. The Coalition proposes that the technical standards applicable to the 2400 MHz ISM band continue to apply to the 2402-2417 MHz segment of that band. This will ensure that products already designed for use in this band will not be displaced and that the regulatory environment in which Part 15 manufacturers operate will remain stable.

¹³ 47 C.F.R. § 18.109.

¹⁴ See Letter from Richard D. Parlow, United States Department of Commerce, to Michael J. McCabe, United States Department of Energy, July 14, 1994 (efforts to increase energy efficiency of microwave ovens "will lead to an increase in radio noise" and "hinder the use of existing radio systems or the implementation of future systems").

modulation explicitly is permitted.¹⁵ As a result, there are few practical radio communications applications using this portion of the spectrum.¹⁶ To enhance further the public benefits provided by Part 15 technologies, the Commission should expressly provide for spread spectrum modulation in the 24.0-24.25 GHz band.

The higher bandwidth available in the 24 GHz range will be extremely important for future unlicensed radio applications, particularly for short and medium-range outdoor networks which will provide coverage to college campuses, hospital complexes, corporate parks, and public school districts, among other environments. These wireless community-wide networks, which will require rapid wireless transmission of large volumes of data, will permit the delivery and shared use of multimedia commercial and educational products. Encouraging the use of spread spectrum modulation in the 24.0-24.25 GHz band would foster the development of the wideband "last mile" technologies that would make such networks possible.

With one exception, operations at 24.0-24.25 GHz could be governed by the same service rules applicable to spread spectrum operation in the other ISM bands under Section 15.247, including applicable power limitations. The one exception is that the provision in Section 15.247(b), which requires a reduction in power for antennas with gain greater than 6 dBi, should not apply to spread spectrum operations at 24.0-24.25 GHz.¹⁷ This change would facilitate greater frequency reuse within a given area and would yield significantly higher transmission capacities

¹⁵ 47 C.F.R. §§ 15.247, 15.249.

¹⁶ See Amendment of Part 90 Revising Authorized Bandwidths in the 24.0-24.25 GHz and 33.4-36 GHz Frequency Bands, 7 FCC Rcd 1773 (rel. Mar. 5, 1992) (24.0-24.25 GHz "lightly used").

¹⁷ In the interests of safety and efficiency, the Commission should require spread spectrum devices operating with EIRPs in excess of 6 dBW to be professionally installed.

than can be achieved with non-directional antennas. Employing directional antennas, spread spectrum Part 15 technologies operating in the 24.0-24.25 GHz band could provide interconnection over distances of several kilometers for fixed point-to-point transmissions and thereby provide an economical, wireless "last mile" delivery system for sophisticated interactive communications.

D. No Rule Changes Are Necessary to Protect Space Research Operations.

The National Research Council ("NRC") expressed concern that "harmonic emissions from 2412-2418 MHz may interfere with radio astronomy use of the 4825-4835 MHz band."¹⁸ As a result, the Commission has requested comment on whether new rules for use of the 2400 ISM band are necessary to protect space research operations.¹⁹

No additional restrictions on Part 15 use are necessary. Part 15 devices have been operating in the ISM bands for several years without causing interference to space research operations. Indeed, NRC's comments were premised on the assumption that the Commission was planning to allocate the 2402-2417 MHz band for general fixed and mobile services. By preserving the 2402-2417 MHz band for Part 15 use, the Commission has alleviated the risk of interference to space research operations. Thus, additional restrictions on the use of these bands are unnecessary.

E. The Coalition Takes No Position On the Combined Use of the 2390-2400 MHz Band and the 2400-2483.5 MHz Band.

In the Second NPRM, the Commission requests comment on "whether some allowance should be made to accommodate operations that combine the use of [the 2390-2400 and 2400-2483.5 MHz] bands."²⁰ Many of the Coalition's members

¹⁸ Second NPRM ¶ 59.

¹⁹ See id.

²⁰ Id. ¶ 55.


emphasize spread spectrum technologies that will continue to operate in the 2400-2483.5 MHz band. Others will be developing products that will function in the new 2390-2400 MHz data-PCS band. Although the Coalition anticipates that both groups will serve important business and consumer needs, it takes no position regarding the combined use of these bands.

II. CONCLUSION

For the reasons set forth herein, the Coalition urges the Commission to adopt the recommendations detailed above, including the creation of an unlicensed Part 16 band.

Respectfully submitted,

THE PART 15 COALITION


By: /s/ W. Kenneth Ferree
Henry Goldberg
Henrietta Wright
W. Kenneth Ferree

GOLDBERG, GODLES, WIENER & WRIGHT
1229 Nineteenth Street, NW
Washington, DC 20036
(202) 429-4900

Its Attorneys

March 20, 1995